



International Genetically Engineered Machine

University of Maryland
College Park



What is Synthetic Biology?

This term combines the fields of engineering and biology to create endless possibilities in terms of scientific research. It usually encompasses the manipulation of genes in model organisms to get a desired result, which includes using biosynthesis techniques, biosensors and other technology. The field has become more advanced and has allowed synthetic biology to spread and become more relevant among younger generations, such as college and high school students.

What is iGEM?

iGEM is a non-profit organization dedicated to education and competition, the advancement of synthetic biology, and the development of an open community.



iGEM hosts a synthetic biology conference in Boston, in which hundreds of collegiate teams from around the world attend. Each team strives to engineer a microbe that performs a useful function, whether it be detecting toxins or synthesizing drugs.



The UMD Team

Our team is composed of:

- **16 undergraduate students:** Iowis Zhu, Stephanie Sansbury, Kevin Fan, Robert Hand, Chun Mun Loke, Pavel Vlasov, Aditya Biswas, Dania Benalla, Dylan Taylor, Kimia Abtahi, Kara Huie, Samiha Ahmed, Juhye Kang, Adam Wahab, George Zhang, and Sarah Wain
- **3 Graduate Students/ Postdoc Advisors:** Tanya Gordonov, Navadeep Boruah, and Nathan Barber
- **3 Faculty Advisors:** Dr. Jason Kahn, Dr. Edward Eisenstein, and Dr. Boots Quimby

Founded in 2014, UMaryland iGEM has shown remarkable progress in the past year. The team earned a Gold Medal at its first international iGEM conference in Boston, and has since more than doubled in size. The UMaryland iGEM team is highly multidisciplinary, with students from engineering, biology, business, computer science, nutrition, public health, and even entrepreneurship.



Research Goals

A Cure for Blindness?

According to the National Institutes of Health, the estimated number of people with Age-Related Macular Degeneration, a common cause of blindness, is expected to increase from 196 million in 2020 to 288 million by 2050 worldwide. Lutein is a drug that effectively treats the disease, but it is hard to obtain it in its pure form because it needs to be extracted from marigold petals. Our primary research focus this summer will be to create lutein with biosynthesis, thereby making the drug a lot easier to produce.

Fighting Antibiotic Resistance

Antibiotic resistant bacteria have the potential to cause a lot of harm to human health, but in order to maintain desired traits in bacteria, synthetic biology labs need to pair them with antibiotic resistance genes. We want to introduce a new system of maintenance that does not require giving bacteria antibiotic resistance using a toxin/antitoxin method. Essentially, the system works by causing bacteria to commit suicide if they lose the desired trait.

How to help:

Sponsoring UMaryland iGEM is not only an opportunity to advance scientific research, but also a crucial step towards inspiring and developing the next generation of scientists and bioengineers.

DNA Designer

Contributions of \$0 to \$3000:

- Allows our team to purchase basic equipment and science materials.
- Company will be represented on the back of our t-shirts, along with the company's logo
- Link to your website on our website and wiki page

RNA Architect

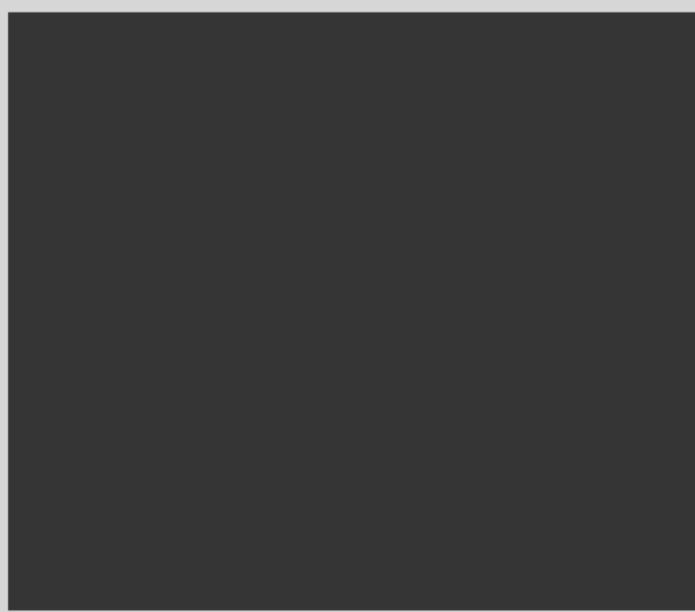
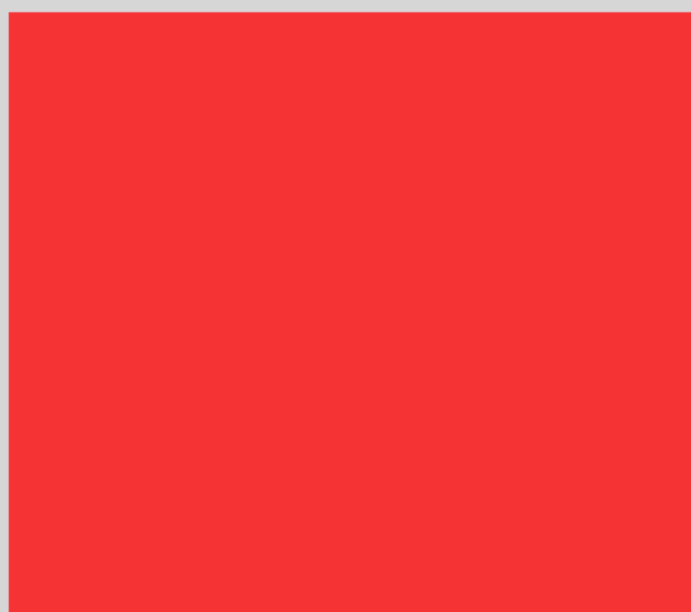
Contributions of \$3001 to \$5000:

- Allows our team to send 3 students to the Jamboree, the annual iGEM conference
- In addition to previous perks, the company will be represented on our the front of our t-shirts
- Company logo on our brochure next year and on front page of our website

Protein Producer

Contributions of \$5001 or more:

- Allows our team to sponsor outreach trips to local high schools and register for the Jamboree.
- In addition to previous perks, the company will be mentioned at all presentations
- Company's logo will be displayed for 2 years on all platforms, including our poster



Questions? Suggestions? Interested in Partnering?

Contact us:

Kevin Fan, Fundraising Chair, qfan@umd.edu

Iowis Zhu, President, izhu@terpmail.umd.edu

Stephanie Sansbury, Vice President, ssansbur@terpmail.umd.edu